

WHAT IS CLAIMED IS:

1 1. An architecture for a communications node in a
2 telecommunications network, said node performing a
3 plurality of call-control functions using an operating
4 system and a single physical platform, said architecture
5 comprising:

6 a plurality of application-level logic blocks
7 corresponding to the plurality of call-control functions;
8 and

9 a common engine module interfaced with the
10 application-level logic blocks, said engine module
11 comprising:

12 a plurality of functional blocks, selected ones
13 of said functional blocks being operable to perform
14 selected ones of the call-control functions when
15 interfaced with selected ones of the application-level
16 logic blocks; and

17 at least one mapping table that interfaces the
18 plurality of application-level logic blocks with the
19 plurality of functional blocks in the common engine
20 module, and selects appropriate functional blocks for
21 matching with the application-level logic blocks.

2. The architecture for a communications node of claim 1 wherein the mapping table includes groups of network addresses for application-level logic blocks and for functional blocks in the common engine module, each of said groups of addresses identifying a selected application-level logic block and at least one functional block in the common engine module that together perform the call-control function corresponding to the selected application-level logic block.

3. The architecture for a communications node of claim 2 further comprising:

a plurality of servlet Application Programming Interfaces (APIs) that are operable to provide a plurality of supplementary user services; and

a servlet manager interfaced with the plurality of servlet APIs and with the plurality of application-level logic blocks, said manager being operable to provide selected ones of the supplementary user services to any one of the application-level logic blocks.

1 4. The architecture for a communications node of
2 claim 1 wherein the telecommunications network utilizes
3 call-control signaling based on the Session Initiation
4 Protocol (SIP), and the plurality of application-level
5 logic blocks include logic blocks for a Call State
6 Control Function (CSCF).

1 5. The architecture for a communications node of
2 claim 4 wherein the plurality of functional blocks in the
3 common engine module include a plurality of SIP behavior
4 functions and a SIP stack that performs reliability and
5 error-checking functions associated with signal
6 communications with the communications node.

1 6. The architecture for a communications node of
2 claim 5 wherein the plurality of SIP behavior functions
3 includes a proxy function, a User Agent Server (UAS)
4 function, and a User Agent Client (UAC) function.

1 7. The architecture for a communications node of
2 claim 5 wherein at least one of the application-level
3 logic blocks includes a Registrar SIP behavior function.

1 8. The architecture for a communications node of
2 claim 5 wherein the SIP stack includes a plurality of
3 portable units, said portable units including:

4 a transaction manager;

5 a parser; and

6 a utility package.

1 9. An architecture for a Call State Control
2 Function (CSCF) node in a Session Initiation Protocol
3 (SIP) telecommunications network, said node performing
4 call-control functions of a Proxy CSCF (P-CSCF), an
5 Interrogating CSCF (I-CSCF), and a Serving CSCF (S-CSCF),
6 said architecture being implemented on top of a single
7 operating system and a single physical platform, said
8 architecture comprising:

9 an application-level logic block corresponding to
10 the P-CSCF;

11 an application-level logic block corresponding to
12 the I-CSCF;

13 an application-level logic block corresponding to
14 the S-CSCF; and

15 a common engine module interfaced with the
16 application-level logic blocks, said engine module
17 comprising:

18 a plurality of SIP behavior functions and a
19 plurality of SIP stack functions, selected SIP behavior
20 functions and selected SIP stack functions being operable
21 to perform the functions of a P-CSCF, I-CSCF, or S-CSCF
22 when interfaced with an appropriate application-level
23 logic block corresponding to the P-CSCF, I-CSCF, or S-
24 CSCF; and

25 at least one mapping table that interfaces the
26 plurality of application-level logic blocks with the
27 plurality of SIP behavior functions and the SIP stack,
28 and selects appropriate SIP behavior functions and SIP
29 stack functions for matching with the application-level
30 logic blocks.

1 10. The architecture for a CSCF node of claim 9
2 further comprising:

3 a plurality of servlet Application Programming
4 Interfaces (APIs) that are operable to provide a
5 plurality of supplementary user services; and

6 a servlet manager interfaced with the plurality of
7 servlet APIs and with the application-level logic blocks,
8 said manager being operable to provide selected ones of
9 the supplementary user services to any one of the
10 application-level logic blocks.

1 11. The architecture for a CSCF node of claim 9
2 wherein the plurality of SIP behavior functions in the
3 common engine module includes a proxy function, a User
4 Agent Server (UAS) function, and a User Agent Client
5 (UAC) function.

1 12. The architecture for a CSCF node of claim 9
2 wherein at least one of the application-level logic
3 blocks includes a Registrar SIP behavior function.

1 13. A method of implementing a communications node
2 in a telecommunications network, said node performing a
3 plurality of Session Initiation Protocol (SIP) call-
4 control functions using a single operating system and a
5 single physical platform, said method comprising the
6 steps of:

7 providing a plurality of application-level logic
8 blocks corresponding to the plurality of call-control
9 functions;

10 assigning a network logic-block address to each of
11 the application-level logic blocks;

12 interfacing with the application-level logic blocks,
13 a common engine module comprising a mapping table, a
14 plurality of SIP stack functions, and a plurality of SIP
15 call-control behavior functions;

16 assigning a network address to each of the SIP stack
17 functions and call-control behavior functions;

18 implementing the application-level logic blocks, and
19 the common engine module on top of the single operating
20 system and the single physical platform;

21 storing in the mapping table, the logic-block
22 addresses, SIP stack function addresses, and behavior-
23 function addresses; and

24 identifying in the mapping table, a plurality of
25 interface groups, each interface group comprising a set
26 of addresses associated with one selected application-
27 level logic block and at least one of the SIP stack
28 functions and call-control behavior functions that,
29 together, perform the call-control function corresponding
30 to the selected application-level logic block.

1 14. The method of implementing a communications
2 node of claim 13 further comprising the steps of:

3 providing a plurality of servlet Application
4 Programming Interfaces (APIs) that are operable to
5 provide a plurality of supplemental user services; and

6 interfacing a servlet manager with the plurality of
7 servlet APIs and with the application-level logic blocks,
8 said manager being operable to provide selected ones of
9 the supplemental user services to any one of the
10 application-level logic blocks.

1 15. The method of implementing a communications
2 node of claim 13 wherein the plurality of SIP call-
3 control behavior functions in the common engine module
4 includes a proxy function, a User Agent Server (UAS)
5 function, and a User Agent Client (UAC) function.

1 16. The method of implementing a communications
2 node of claim 15 further comprising the step of
3 implementing a SIP Registrar behavior function in at
4 least one of the application-level logic blocks.

1 17. An architecture for a communications node in a
2 Session Initiation Protocol (SIP) telecommunications
3 network, said node performing a plurality of call-control
4 functions using a common operating system and being
5 implemented on a single physical platform, said
6 architecture comprising:

7 means for performing application-level logic
8 corresponding to the plurality of call-control functions;

9 means for interfacing a plurality of SIP functional
10 blocks with the application-level logic blocks, selected
11 ones of said SIP functional blocks being operable to
12 perform selected ones of the call-control functions when
13 interfaced with selected ones of the application-level
14 logic blocks; and

15 means for mapping into groups, the plurality of
16 application-level logic blocks and the plurality of SIP
17 functional blocks, each of said groups defining a
18 different one of the plurality of call-control functions
19 performed by the node.